

ORIGINAL



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BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

DOUG LITTLE, CHAIRMAN
BOB STUMP
BOB BURNS
TOM FORESE
ANDY TOBIN

MAR 28 2016 P 4: 29

AZ CORP COMMISSION
DOCKET CONTROL

IN THE MATTER OF THE PROPOSED
AMENDMENTS TO THE PIPELINE SAFETY
RULES A.A.C. R14-5-202, R14-5-203, R14-5-
204, R14-5-205, AND R14-5-207.

Docket No. RG-00000A-15-0098

**NOTICE OF FILING
SPECTRUM LNG RESPONSES**

Spectrum LNG provides its responses to the questions set forth in the January 28, 2016 Procedural Order specifically regarding the proposed A.A.C. R14-5-202(T), as well as responding to Staff's responses submitted March 2, 2016.

RESPECTFULLY SUBMITTED this 28th day of March, 2016.

Arizona Corporation Commission

DOCKETED

MAR 28 2016

DOCKETED BY

SNELL & WILMER, L.L.P.

By

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Original and 13 copies of the foregoing
filed this 28th day of March, 2016, with:

Docket Control
Arizona Corporation Commission
1200 West Washington Street
Phoenix, Arizona 85007

Copy of the foregoing hand-delivered
this 28th day of March, 2016 to:

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17 Service List in Docket No. RG-00000A-15-0098

18 By Jaclyn Howard
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Spectrum LNG Responses
March 28, 2016
Docket No. RG-00000A-15-0098

Introduction.

Spectrum LNG is a regional liquefied natural gas (LNG) producer, which owns Desert Gas, LP. Desert Gas serves the motor fuels market in the Western US with over 50,000 gallons per day of LNG from its Ehrenberg, Arizona LNG Plant. Nevertheless, it is a relatively small operation. Through its Ehrenberg operations, Desert Gas provides LNG for fueling stations in Arizona and Southern California. Desert Gas does not transport or transmit any LNG through a transmission main or otherwise outside its property lines. As a regional LNG producer, Spectrum has extensive experience with relevant regulations involving LNG – including 49 CFR Part 193 (Liquefied Natural Gas Facilities; Federal Safety Standards).

Desert Gas was specifically the subject of a complaint from Staff's Office of Pipeline Safety ("Staff") in Docket No. G-20923A-15-0030 mentioned in Staff's March 2, 2015 responses. What Staff did not mention is that Spectrum and Desert Gas worked with Staff, and entered into a settlement agreement that adopted several proactive measures specifically tailored to ensure safety at the Ehrenberg LNG plant that go above and beyond the current regulations (both federal and state). Unfortunately, Staff continues to press for its proposed R14-5-202(T) that is unnecessary, unduly burdensome in the increased costs to Spectrum and others and fails to take into account the current federal process being undertaken to examine regulation of LNG consisting of experts from various perspectives. Notably, the subject matter of the complaint involved no release of natural gas in any form, no injury to persons, no damage to property and no pipe weld failures in that there was no piping that physically came apart.

For purposes of these responses, both Desert Gas, LP and Spectrum LNG will be referred to as "Spectrum" going forward.

Currently, the federal regulations at 49 CFR Part 193 adopt the National Fire Protection Association (NFPA) Standard 59A regarding welded pipe tests for LNG at Section 6.6.3. See 49 CFR Part 193.2013. The NFPA Standard at Section 6.6.3. provides that all circumferential butt welds shall be examined fully by radiographic or ultrasonic inspection. Even so, the NFPA provides for an exception that for pressure piping operating at above -20 degrees Fahrenheit – that 30% of each day's circumferential welded pipe joints will be tested over the entire circumference in accordance with American Society of Mechanical Engineers (ASME) Standard B 31.3 (examination procedures for process piping). See NFPA Standard 59A at Section 6.6.3.2. The U.S. Department of Transportation – Pipeline and Hazardous Materials Safety Agency

(“PHMSA”) has determined that this exception – as set forth by the NFPA is appropriate to adopt for LNG facilities – as the entity with the in-house expertise to make that determination. Yet it is this exception that Staff proposes to remove with its proposed R14-5-202(T).

Spectrum has sought to work with Staff, including implementing specific measures to ensure the safety of its Arizona operations go above and beyond what is currently in the U.S. or Arizona regulations. Indeed, Spectrum has implemented these measures at significant cost to it. Spectrum believes the measures it has agreed to as part of settling the complaint against it in Docket No. G-20923A-15-0030 are cost-effective, and will lead to significantly greater assurances of safety within its Ehrenberg operations. But the proposed rule at A.A.C. 14-5-202(T) likely will impose significant additional cost that will not provide any significant benefit from measures Spectrum has already undertaken as result of settling the complaint. Implementing A.A.C. R14-5-202(T) as proposed by Staff should not be done at this time, so that Spectrum can fully implement the measures it agreed to in the settlement – and so that both Staff and Spectrum can determine their effectiveness. Otherwise, Spectrum will likely suffer adverse economic impact by having to implement 100% non-destructive testing on all welds *in addition to* what it has already spent to comply with the terms and conditions of the settlement in Docket No. G-20923A-15-0030.

Further, PHMSA has recently undertaken an examination of its regulations as it applies to LNG operators similar to that of Spectrum. Specifically, PHMSA is soliciting input and obtaining background information for the formulation of possible future regulatory changes to 49 CFR Part 193, regarding LNG facilities. Spectrum’s understanding is that this workshop will bring federal and state regulators, emergency responders, NFPA Standard 59A technical committee members, industry, and interested members of the public together to participate in shaping a future LNG rule.

On this matter, PHMSA is the appropriate entity for developing and modifying technical codes related to the operations of LNG facilities, because it has the specific expertise in cryogenics¹ necessary to determine the appropriateness of any changes including what Staff is proposing in this rulemaking. PHMSA has more experience and background in determining what is the appropriate level of non-destructive testing for LNG facilities. Since PHMSA is currently and actively progressing through an update of this code to keep it current and updated, Spectrum believes the Commission should defer to the PHMSA process on the appropriate percentage of non-destructive testing for welds done at LNG facilities, as well as all aspects of safety regulations at LNG Plants.

¹ Cryogenics – meaning Cryogenic liquids that are liquefied gases that are kept in their liquid state at very low temperatures and have a normal boiling point below -238 degrees Fahrenheit.

Finally, Staff's concern appears to focus on the inherent danger associated with piping at extremely high pressures simultaneous with extremely low temperature. In other words, it seems that Staff is asserting that LNG plants are inherently more dangerous because they have in addition to "high pressure" pipe they have "cold pipe" and they make it sound inherently more dangerous. To the contrary Spectrum's Arizona operations, has no piping that is under both high pressure and cold temperatures. In short, the significant majority of welding done on LNG facilities will not be done on piping that is both (1) at high pressures; *and* (2) at cold temperatures. Further, that piping which does contain LNG is at low pressure and low temperature consist of stainless steels and aluminum, which are not weakened by low temperatures. Spectrum, in compliance with industry standards, uses non-carbon steel and/or aluminum for such piping. Simply put: the purpose of the LNG plant is to condense methane at a low temperature in order to avoid having to store it under high pressure. Converting steam into water so it is more easily stored is a good analogy. The City of Phoenix runs many of its transit buses on natural gas. Some store the gas onboard under high pressure (3,500 psi) but in a gaseous state and it is called CNG for Compressed Natural Gas. The balance of the natural gas bus fleet runs on methane that has been condensed into a liquid state, so it is denser and improves the operating range of the bus. This fuel is called LNG.

With that introduction, Spectrum now provides its responses to the questions posed in the January 28, 2016 Procedural Order

Responses to Questions.

1. What are the technologies available to non-destructively test welds as required under R14-5-202(T)?

As stated above NFPA Standard 59A specifically provides for the allowance of 30% nondestructive testing for pressure piping above -20 degrees Fahrenheit. Spectrum notes that Staff did not indicate what the standards are regarding each of the tests it lists, including the frequency of performing these tests. For instance, ASME B31.3 at paragraph 344.1.3. defines three different terms for examination – only one of which is 100% examination (the other two being random examination and spot examination). Spectrum maintains that 100% nondestructive testing is not necessary and will not provide significant benefit to justify the increased costs.

2. What is the estimated cost to test a weld using each of the technologies identified in response to question 1?

Staff's response is largely speculation. The fact is no one can be sure what the cost impacts will be with the proposed R14-5-202(T), except the costs will be significant. The Staff provides only a hypothetical case for estimating the cost increase due to the proposed rule, and may not reflect actual costs (for example, it is unclear why Staff's proposed rule would lead to only four days of testing under its hypothetical). Further, Staff's response is based on production work, and not reflective of what will likely be found in the field. Further, Staff does not include the cost associated with a loss of production from the facility. For example, if a repair is needed at the plant that involves welding, Staff only estimates as to the cost of the inspection work performed might be. Even so, Staff cannot estimate the loss of production, which is necessary to fully determine the economic impact of the proposed rule R14-5-202(T). Put simply, the economic impact of the proposed rule to operations like Spectrum will be substantial. Even so, PHMSA is undertaking a full evaluation of regulation of LNG facilities at the federal level, with the requisite expertise to fully determine and evaluate the economic impact of any new regulation. Spectrum will participate in that process, and further suggests that the appropriate method to modify the code, as Staff is attempting to do, is to make a proposal before a body of experts in the welding of carbon steel pipe. Staff should submit written comments to PHMSA at this forum. If PHMSA agrees, they can include the change in the next edition of the federal code.

Spectrum notes that the proposed rule would impact testing of 95% of the welds performed on any new facilities Spectrum contemplates building, which may significantly and adversely impact any plans for expansion within Arizona. Spectrum recently purchased ten acres of land from the State of Arizona, adjacent to their LNG plant for the purpose of investing in a new LNG plant. This project has been suspended primarily due to economic head winds in the energy sector, but the proposed rule will further increase the cost of a suspended project that can provide much needed economic stimulus to western Arizona. Any added costs to a marginally economic project further degrade its chance of success.

Spectrum believes that the Commission should, as a matter of policy, consider the cost implications of Staff's proposal. For instance, while the Arizona State Police could conclude that operating the highway system at 45 MPH would provide for a reduction in traffic-related fatalities, such a change would come at significant cost to the State's economy and commerce would likely avoid it. Unnecessarily burdening the PNG sector with additional regulations will result in the sector locating elsewhere. Neither California nor New Mexico has considered the regulation proposed by Staff.

3. **To Staff's knowledge, has any other U.S. State, any other jurisdictional governmental entity, or any recognized industry standard-setting entity adopted**

a requirement substantially similar to that in R14-5-202(T) or more stringent than the requirement in 49 CFR 193.203? If so please identify each such entity and provide a copy of the requirement adopted.

Spectrum knows of no other State, jurisdictional governmental entity, or any industry standard that has adopted a requirement substantially similar to proposed R14-5-202(T) or more stringent than the proposed rule.

Spectrum notes that both the NFPA and PHMSA saw fit to provide the exception for “warm pipe” (that pipe operating at temperatures above -20 degrees Fahrenheit) which requires 30% of such pipe be non-destructively tested. Further, for Spectrum’s operations in Arizona, warm pipe is involved in approximately 95% of those operations. NFPA and ASME (industry entities) and PHMSA (an agency under the U.S. DOT) are the entities with the primary expertise in this area. As noted below in the email date March 9, 2016, PHMSA is undertaking a workshop to fully examine the scope and extent of regulation of LNG facilities such as Spectrum’s Arizona operations. That process should be allowed to play itself out before any changes are made that could have very significant impacts on small operations of LNG facilities.

From: julie.Halliday@dot.gov [<mailto:julie.Halliday@dot.gov>]

Sent: Wednesday, March 09, 2016 8:56 AM

To: julie.Halliday@dot.gov

Cc: kenneth.lee@dot.gov; Meredith.secor@dot.gov; joseph.sieve@dot.gov

Subject: US DOT PHMSA - Public Workshop on LNG Regulations - Registration Open

All –

We have mentioned the LNG workshop to many of you over the last few months. We are finalizing the agenda but have opened online registration. Once the agenda is finalized, it will be posted on the meeting web site and emailed to all registrants that do not opt out (to opt out, select, “Do Not Include Me in Email Broadcasts” on the registration page). A notice of the meeting will also be published in the Federal Register.

US DOT Pipelines and Hazardous Materials Safety Administration (PHMSA) and the National Association of Pipeline Safety Regulators (NAPSR) are holding a two-day LNG Workshop on May 18-19, 2016 to solicit input and obtain background information for the formulation of a future regulatory change to CFR 49 Part 193, Liquefied Natural Gas Facilities. This workshop will bring federal and State regulators, emergency responders, NFPA 59A technical committee members, industry, and interested members of the public together to participate in shaping a future liquefied natural gas (LNG) rule.

The presentations include the following topics:

- Stakeholder perspectives on the need to update CFR 49 Part 193

- Regulator, emergency responder, NFPA 59A committee, large scale, peak shaver, and small scale LNG operators, public
- LNG incidents and response
- LNG facility siting and consequence modeling
- LNG technologies
- Process safety at LNG plants

If you are interested in attending in person or via webcast, please register at:
PHMSA Public Workshop on Liquefied Natural Gas (LNG) Regulations

Meeting Location:

US DOT Headquarters
 1200 New Jersey Ave, SE
 Washington, DC

Please feel free to forward this email to interested parties.

Thanks,
 Julie

Julie Halliday
 Engineering & Research
 US DOT PHMSA
 202-366-0287 (O)
 703-585-5791 (C)

4. What caused Staff to conclude that it is necessary to require nondestructive testing of each weld performed on site at an LNG facility on newly installed, replaced, or repaired LNG pipeline or appurtenances?

Spectrum worked with Staff in Docket No. G-20923A-15-0030 to develop a comprehensive settlement with many measures that go above and beyond the current rules *and* which will be as or more cost-effective in providing assurances of safety and Spectrum's Arizona operations. Further, Spectrum notes that no gas was ever released, and no welds failed in that the piping physically came apart. The issue in that one isolated incident essentially involved issues with the contractor Spectrum hired to perform the weld, who performed welds of substandard quality. Spectrum worked quickly to resolve the complaint with Staff and avoided needless litigation for both parties, and to ensure that such an incident does not occur again. Spectrum paid a significant fine and agreed to pay an even greater amount should the problem recur. Additionally Spectrum adopted a host of other programs that exceed the Federal Requirements but will enhance the overall safety of its operations.

Further, while X-ray examination can be useful in determining the quality of a weld, this examination technique cannot accurately predict physical failure; rather it can only compare one weld against another for quality. In other words, an X-ray can indicate a certain amount of porosity or contaminants that might be contained in the weld; but these will not conclusively predict the failure of the weld to perform its function. Under various codes each weld is permitted a certain percentage of flaws. All of the welds in question were performed by hand versus machine (as most welds are) and no weld is absolutely perfect in performance. Thus, 100% non-destructive testing is not the failsafe that is suggested in the proposed rule. Put simply, the measures adopted in the settlement in Docket No. G-20923A-15-0030, being specific to Spectrum's Arizona operations, are a better and more cost-effective means of promoting safety goals.

Further, examinations of X-ray tests of any given pipe weld are quite literally subject to interpretation. Spectrum has firsthand experience of the same X-rays receiving different interpretations (i.e., reading the film) by different inspectors from the same inspection company. In one case (not the one that was the subject of Docket No. G-20923A-15-0030) the conclusions after the initial inspection was that there was an unusually large percentage of weld X-rays that indicated too great of a percentage of certain undesirable features. Given that these welds were performed under ideal conditions, Spectrum requested that the inspection company re-examine the X-ray tests. The chief inspector for the company did re-read the film and determined that his inspectors had misread the film and that the welds in question were more than adequate. Copies of the test results and emails regarding the results are attached as Exhibit 1.

Finally, the events that gave rise to the issues in Docket No. G-20923A-15-0030 were independent of the percentage of testing required. Spectrum acknowledged that mistakes were made. But neither that incident nor the possibility of future facilities mentioned in Staff's response (likely to be substantially different in size and scope than Spectrum's operations) justifies the proposed R14-5-202(T), especially when Spectrum has expended significant costs to implement the measures agreed to in settling the complaint from Docket No. G-20923A-15-0030.

- 5. Is Staff aware of any incidents of weld failure in LNG facility pipeline or appurtenances in the U.S. or any other country? If yes, please identify where and when the incident occurred, identify what entity or entities owned and operated the affected LNG facility pipeline or appurtenances, describe any findings regarding the cause of the incident and identify by whom those findings**

were made, and describe the physical and economic damages caused by the incident?

Spectrum disagrees with Staff's response to this question for multiple reasons. First, Spectrum notes that 49 CFR Part 193, does apply to peak shavers. Peak shaving LNG facilities, are described as facilities that liquefy and store natural gas typically produced during summer months for re-gasification and distribution during the periods of high demand, usually on cold, winter days. Regulations regarding LNG facilities appear to have been in effect since February 11, 1980. . Spectrum does not understand Staff's position that peak shavers are somehow unregulated, as they clearly are within the scope of 49 U.S.C. § 60102 (Pipeline Safety – Purpose and General Authority). Such facilities are within the scope of PHMSA regulations starting at 49 CFR Part 193.2001. Spectrum asserts that it is common knowledge in the North American LNG industry that 49 CFR 193 was written and adopted specifically in response to the growth in the number of peak shavers being built in the Northeast. The 193 code was a political response to local and vocal public opposition to very large, and what some considered unsightly storage tanks being constructed, such as the one being proposed in Tucson that can be seen from some distance. The code calls for certain exclusion zones around the storage tank that is relative to the size of the tank and effectively blocked many peak shavers from being built closer to the markets they serve.

Second, the December 2014 incident at Intermountain Gas does not appear to be material to Spectrum's operations. This incident is also distinct, as it involves an economizer (i.e., likely at heat exchanger) with prefabricated welds delivered to the site. According to Staff's response to question number 10, such welds would be exempt from its proposed R14-5-202(T). Thus, this matter appears to have no relevance to pipe welds performed at an LNG facility.

Finally, Spectrum notes several regulations that indicate reporting requirements – including 49 CFR Part 193.2011 (requiring that leaks and spills be reported in accordance with the requirements of Part 191). Specifically, 49 CFR Part 191.23 (a)(3), (4), and (8) points out specific instances that require reporting of material defects. Copies of these regulations are attached as Exhibit 2. Thus, Spectrum strongly disagrees that failures at a large number of LNG facilities would go unreported, to the extent that those failures would pose a safety threat to persons and property.

- 6. What is the operating pressure present in typical LNG pipeline and appurtenances used in the same amount as those at Desert Gas's LNG facility?**

There really is no "typical LNG pipeline" since pipelines are operating at a variety of temperatures and pressures, where LNG will not exist. Even so, Spectrum has a very small percentage of piping (less than 300 feet) operating at low temperatures. While most of Spectrum's piping is pressure piping subject to ASME B 31.1, Section 345, the 30% testing exception applies as it is pressure piping operating above -20 degrees Fahrenheit, under NFPA 59A at Section 6.6.3.2. Generally the highest pressure Spectrum handles LNG at is around 100 psi, and is seen downstream of the truck loading pump when filling a trailer. Normal trailer pressure after loading is 15 psi. This compares favorably to the normal 3,500 psi found in the city transit busses and in CNG fueled automobiles everywhere.

7. What is the operating pressure present in typical natural gas transmission pipelines for which 100 percent of new welds must be nondestructively tested?

Spectrum believes that the testing of natural gas transmission pipelines may depend more on the location of the line than the operating pressure. Subpart E of Part 192 addresses welding for natural gas pipelines. Specifically, 49 CFR 192.241 provides for numerous exceptions to X-ray inspection based on the operating conditions of the pipe including percentage of SMYS (Specified Minimum Yield Strength). 49 CFR 192.243(d) describes what percentage of nondestructive testing is required for certain classes of locations. For class 1 and class 2 locations for example, the percentage of testing required is at least 10% and 15% respectively – while 100% testing is required for certain Class 3 and Class 4 locations, as well as other locations. The rule change sought by staff does not consider either class location or percent of SMYS.

8. What are the temperatures present in typical LNG pipeline and appurtenances used in the same manner as those at Desert Gas's LNG facility, and what impact do those temperatures have upon pipeline and weld materials?

Spectrum's Arizona operations in Ehrenberg has LNG pipeline where temperatures range from a high of 250 degrees Fahrenheit to a low of -242 degrees Fahrenheit. Pressures range from a high of 1,000 psi to a low of 15 psi. But importantly, no single pipe experiences this range of temperature or pressure. There are many separate stages to the pressures and temperatures that exist in the plant. Even so, in all cases, at various locations in the process, the piping utilized is appropriate for the service it is under (i.e., the temperatures and pressures used for that particular stage in the operations).

To be clear, the present matter only addresses "warm pipe welds" (above -20 degrees Fahrenheit); so there is no question about the procedures for the lower temperature cryogenic piping. It should be understood that LNG cannot exist at -20 degrees Fahrenheit, as the triple point for methane is -115 degrees Fahrenheit. Thus, nothing in Staff's proposed rule has anything to do with cryogenic piping; and the introduction of LNG or extremely low temperature service into the argument over this matter is simply not germane. Even so, the pipe in question is in relative proximity to LNG piping, just as the Commission's offices are in relative proximity to LNG piping each time a City of Phoenix LNG fueled transit bus passes by the building.

9. **What are the temperatures present in the typical natural gas transmission pipelines described in question 7, and what impact do those temperatures have upon pipeline and weld materials?**

Spectrum agrees with Staff's response and has no additional response to this question at this time.

10. **Why does Staff believe that it is not necessary to nondestructively test all welds made by a manufacturer of a prefabricated assembly being newly installed at LNG facility (i.e., that it is only necessary to nondestructively test the welds made on site to connect the prefabricated assembly to the existing LNG facility pipeline and appurtenances)?**

Spectrum agrees with Staff's response and has no additional response to this question at this time.

11. **To Staff's knowledge, has any other U.S. state, any other jurisdictional governmental entity, or any recognized industry standard-setting entity considered and decided not to adopt either a requirement substantially similar to that in R14-5-202(T) or a requirement more stringent than the requirement in 49 CFR 193.203? If so, please identify each such state or entity and provide a copy of any documentation regarding the entity's consideration and decision not to adopt the requirement.**

Staff's experience in regulating this area is limited, since Arizona is not an oil-and-gas producing state. To Spectrum's knowledge, Arizona has no gas-processing facilities other than two small-scale LNG plants. Spectrum's understanding is that gas transmission pipeline facilities that exist in Arizona were primarily installed to

connect the prolific producing regions in West Texas or the Rocky Mountains to the substantial energy market in California. These larger-scale facilities are significantly different than small-scale liquefiers are (such as Spectrum's operations). In determining what percentage of the welds on these large interstate facilities, PHMSA takes into consideration the size of pipe, SMYS and the Class location of the pipeline, but 100% X-ray testing is not always required. Thus, to compare large-scale facilities to small-scale operations is similar to comparing a single engine Cessna airplane with a Boeing 777. Spectrum notes that U.S. DOT, which has jurisdiction over both pipelines and aircraft, differentiate between airline operations, air taxi operations, and general aviation operations.

While Staff may have been ahead of other states in implementing pipeline safety rules, PHMSA is the entity with the expertise to examine the adequacy of current rules over LNG facilities. PHMSA has a process currently underway to examine the regulation of LNG facilities – bringing together a wide variety of expertise from multiple perspectives. Spectrum urges the Commission to participate in the PHMSA process and not independently enact a proposed rule that will impose substantial additional cost without significant benefit, which interferes with measures already being undertaken by Spectrum by imposing significant additional cost, and is unnecessary.

Exhibit 1

From: Bret Bartholomy
Sent: Wednesday, October 21, 2015 7:17 AM
To: Timothy Steeper <tim@spectrumlng.com>
Cc: Ray Latchem <ray@spectrumlng.com>; Tom Steeper <Tom@desertgas.com>
Subject: RE: Weld inspections

Tim,

I had a long conversation with Kurt Cardwell at TGR yesterday afternoon. He manages the Tulsa x-ray crews and is their only Level 3 RT technician. He looked at all of the films and said only 2 of the original welds should have failed, but not for the reasons indicated. The repaired weld that failed should have passed as well. He was quite embarrassed and said he would start by not charging us for the trip or x-rays on 10/9 to shoot the repairs. He asked to keep the films overnight and will deliver them to me today with a plan to get it all resolved.

He was surprised our QA calls for 30% since B31.3 says 10%. I believe it was Ray Wilsdorf that originally told me to do 30%. Kurt knows the code well so I told him you would probably be calling to get some clarity on a few things. His number is 918-585-3228. He also said if we ever have another failure and our welder disagrees with the interpretation to call him immediately and he'll drive to Stroud to investigate, no charge. He mentioned Brian Whitehead from their OKC office drives by Stroud on a daily basis and can look at things any time we have a question.

I suggest we submit a revised QA procedure to the ACC explaining we misinterpreted the code. They'll answer within a couple of days then we'll know how many more welds we need to shoot.

Thanks,
Bret

From: Timothy Steeper
Sent: Tuesday, October 20, 2015 5:41 PM
To: Bret Bartholomy <bret@spectrumlng.com>
Cc: Ray Latchem <ray@spectrumlng.com>; Tom Steeper <Tom@desertgas.com>
Subject: Weld inspections

I have been rereading paragraph 341.3.4 in B31.3 on progressive sampling, and am now more confused than ever. I think we need to get an interpretation of the standard by your weld engineer to see where we stand. Subparagraph (f) states

If any of the defective items are repaired or replaced, reexamined, and a defect is again detected in the repaired or replaced item, continued progressive sampling in accordance with (a), (c), and (e) is not required based on the defects found in the repair. The defective item(s) shall be repaired or replaced and reexamined until acceptance as specified in para. 341.3.3. Spot or random examination (whichever is applicable) is then performed on the remaining unexamined joints.

Five of the welds inspected failed RT according to the original TGR interpreter. Four of those welds were repaired and re-examined. One of the repaired welds again failed RT according to the TGR

interpreter. Does the last sentence in subparagraph (f) say that we now have to RT 5% of the remaining welds? If so, since there were no failures on any of the 4" or 6" welds, can we reasonably limit the RT to just the 2" butt welds?

Should be OK to pay



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TECHNIQUE/INSPECTION REPORT

DATE 10-8-15 DAY Thursday

CUSTOMER DATA		TGR JOB#
NAME	<u>Spectrum LMC</u>	
ADDRESS	<u>Stroud, OK</u>	
PHONE	<u>803-59-7021</u>	ATTN:
W.O. #	<u>71420</u>	P.O. # <u>10-08-15 05-1</u>
JOB LOCATION	<u>Stroud, OK</u>	
DESCRIPTION	<u>2" welds</u>	MATERIAL TYPE: <u>95</u>

DEFECT CODE										ABBREVIATED TERMS														
AB - ARC BURN AI - ALIGNED INDICATION BT - BURN THROUGH CON - CONCAVITY CRACK - CRACK					HB - HOLLOW BEAD IP - INADEQUATE FUSION IP - INCOMPLETE PENETRATION MA - MISALIGNMENT POR - POROSITY					SLI - SLAG INCLUSION SLL - SLAG LINE SURF - SURFACE INDICATION UCE - UNDERCUT EXTERNAL UCI - UNDERCUT INTERNAL					SOD - SOURCE TO OBJECT DISTANCE OFD - SOURCE SIDE OF OBJECT TO FILM DISTANCE OD - OUTER DIAMETER WT - WELD THICKNESS WR - WELD REINFORCEMENT					REP - REPAIR RET - RETAKE RES - RESHOOT DEN - DENSITY BM - BASE MATERIAL				

WELD/FILM NUMBER	JOB NUMBER	OD	BM	WR	WT	WITHIN STD'S	# FILM	FILM SIZE / MPG / TYPE	SOD	OFD	OD	# EXP	DEN	DEFECT LOCATION
	<u>Line #</u>					YES	NO							
1 <u>W-7</u>	<u>71B</u>	<u>2'</u>	<u>218</u>	<u>125</u>	<u>343</u>	/		<u>3 3 1/2 x 8 1/2 - SD</u>	<u>2.38</u>	<u>3.30</u>	<u>12</u>	<u>3</u>	<u>2.8</u>	
2 <u>W-8</u>						/								
3 <u>W-10</u>						/								
4 <u>W-11</u>						/								
5 <u>W-4</u>	<u>71D</u>					/								
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7 <u>W-10</u>	<u>73B</u>					/								<u>SLL</u>
8 <u>W-11</u>						/								
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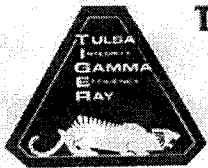
Replaces 145270

METHOD	SOURCE SIZE DIAG.	ISOTOPE	NO. CURIES	DEV. TIME	DEV. TEMP	DENSITY
<u>R+</u>	<u>151</u>	<u>IR152</u>	<u>65</u>	<u>5min</u>	<u>68°F</u>	<u>20.4.0</u>
NO. OF WELDS	FT. LONG SEAMS	STANDARDS	NO. OF FILM	FILM/ CASSETTE	EXPOSURE:	MIR/R SCREENS
<u>11</u>		<u>B31-3 Normal</u>	<u>33</u>		<u>DBL WALL</u>	<u>5 PS</u>
TRUCK NO.	REPORT NO.	PAGE NO.	TECH. HOURS	ASST. HOURS	VIEWING:	MILEAGE
<u>7-124</u>	<u>1 of 1</u>	<u>1 of 1</u>			<u>DBL WALL</u>	
SHOP	FILM INTERPRETER	ASST. NAME	TOTAL HOURS		ASNT LEVEL	
	<u>Joe Emy</u>	<u>K Bigorse</u>			<u>II</u>	
COMPANY REPRESENTATIVE			NDT TECHNICIAN		ASNT LEVEL	
					<u>II</u>	

SIGNATURE CERTIFIES TIME & MATERIALS CORRECT

SIGNATURE

This ticket replaced by 154836



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CUSTOMER DATA

NAME Spectrum LNG
ADDRESS Stroud, OK
PHONE (803) 599-7021 ATTN:
W.O. # TC 420 PO. # 100815 TDS-1
JOB LOCATION Stroud, OK
DESCRIPTION 2" + outlets MATERIAL TYPE CS

TECHNIQUE/INSPECTION REPORT

DATE 10-08-15 DAY Thursday

DEFECT CODE										ABBREVIATED TERMS														
AB - ARC BURN AI - ALIGNED INDICATION BT - BURN THROUGH CON - CONCAVITY CRACK - CRACK					HB - HOLLOW BEAD IF - INADEQUATE FUSION IP - INCOMPLETE PENETRATION MA - MISALIGNMENT POR - POROSITY					SLI - SLAG INCLUSION SLL - SLAG LINE SURF - SURFACE INDICATION UCE - UNDERCUT EXTERNAL UCI - UNDERCUT INTERNAL					SOD - SOURCE TO OBJECT DISTANCE OFD - SOURCE SIDE OF OBJECT TO FILM DISTANCE OD - OUTER DIAMETER WT - WELD THICKNESS WR - WELD REINFORCEMENT					REP - REPAIR RET - RETAKE RES - RESHOOT BM - BASE MATERIAL				
WELD/FILM NUMBER	JOB NUMBER	LINE #	OD	BM	WR	WT	WITHIN STD'S	#	FILM	FILM SIZE / MFG / TYPE	SOD	OFD	IQI	#	DEFECT LOCATION									
							YES	NO							T2	2-3	3-T							
1 W 7	T2, 2-3, 3-T	71B	2"	28"	125"	543"		X	3	3'0" X 8'0"	225"	318"	12F	3	6000	6000	1000							
2 W 8										50 speed														
3 W 10																								
4 W 11																								
5 W 4	73B	71B																						
6 W 5															OK	IP	IF							
7 W 10		73B													IP	IP	IP							
8 W 11															OK	OK	IP							
9 W 1		7FI																						
10 W 5															OK	IF	OK							
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METHOD <u>RT</u>		SOURCE SIZE DIAG. <u>151</u>		ISOTOPE <u>IR-192</u>		NO. CURIES <u>165.0</u>		DEV. TIME <u>5:00</u>		DEV. TEMP <u>68°</u>		DENSITY <u>2.040</u>												
NO. OF WELDS <u>11</u>		FT. LONG SEAMS <u>151</u>		STANDARDS <u>ASME SEC 8 UW51</u>		NO. OF FILM <u>33</u>		FILM/ CASSETTE <u></u>		EXPOSURE: DBL WALL <u></u> S. WALL <u></u>		VIEWING: DBL WALL <u></u> S. WALL <u></u>		MUR/ SCREENS <u>5/16</u>										
TRUCK NO. <u>T-104</u>		REPORT NO. <u>1</u>		PAGE NO. <u>1</u>		TECH. HOURS <u>6</u>		ASST. HOURS <u>6</u>		TRAVEL HOURS <u>2</u>		TOTAL HOURS <u>8</u>		MILEAGE <u>100</u>										
SHOP <u>T-104</u>		FILM INTERPRETER <u>Kyle Bghorse</u>		ASST. NAME <u>Joe Ewy</u>		ASNT LEVEL <u>II</u>																		
COMPANY REPRESENTATIVE <u>Justin Wilson</u>		NDT TECHNICIAN <u>K. Bghorse</u>		ASNT LEVEL <u>II</u>																				

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SIGNATURE

They are supposed to void this invoice

TGR INDUSTRIAL SERVICES

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www.tgrind.com

TECHNIQUE/INSPECTION REPORT

DATE 10-5-15 DAY Friday

CUSTOMER DATA		TGR JOB#
NAME <u>Spectrum LNB</u>		
ADDRESS <u>Stroud, OK</u>		
PHONE	ATTN:	
W.O. # <u>TC 440</u>	P.O. # <u>10-9-15</u>	<u>DS-1</u>
JOB LOCATION <u>Stroud, OK</u>		
DESCRIPTION <u>Re-welded welds</u>	MATERIAL TYPE <u>95</u>	

DATE 10-1-79

DEFECT CODE

ABBREVIATED TERMS

AB - ARC BURN
AI - ALIGNED INDICATION
BT - BURN THROUGH
CON - CONCAVITY
CRACK - CRACK

HB - HOLLOW BEAD
IF - INADEQUATE FUSION
IP - INCOMPLETE PENETRATION
MA - MISALIGNMENT
POR - POROSITY

SLI - SLAG INCLUSION
SL - SLAG LINE
SURF - SURFACE INDICATION
UCE - UNDERCUT EXTERNAL
UCI - UNDERCUT INTERNAL

SOD - SOURCE TO OBJECT DISTANCE
OFD - SOURCE SIDE OF OBJECT TO FILM DISTANCE
OD - OUTER DIAMETER
WT - WELD THICKNESS
WR - WELD REINFORCEMENT

REP - REPAIR
RET - RETAIL
RES - RESHOOT
DIN - DENSITY
BM - BASE MATERIAL

WELD/FILM NUMBER	JOB NUMBER	OD	BM	WR	WT	WITHIN STD'S		# FILM	FILM SIZE / MFG / TYPE	SOD	OFD	RQI S-F	# EXP	DEN	DEFECT LOCATION
						YES	NO								
1 W-1	T-2	713	2"	218	125	275	/	1	3 1/2 x 18 1/2	233	275	1-B	1	2.6	
2	2-3						/		D-7						
3	3-T						/								
4 W7R	3-T						/								
5 W5R	FE	733					/								
6	2-3						/								
7	3-T						/								
8 W1R	3-T	752					/								
9 W6R	2-3	6					/								
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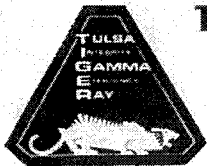
Repairs 145612

METHOD <u>RT</u>		SOURCE SIZE DIAG. <u>151</u>		ISOTOPE <u>Eu-152</u>		NO. CURIES <u>605</u>		DEV. TIME <u>5 min</u>		DEV. TEMP <u>68°F</u>		DENSITY <u>2.0-4.0</u>	
NO. OF WELDS <u>5</u>	FT. LONG SEAMS	STANDARDS <u>B31.3 NS</u>		NO. OF FILM <u>9</u>	FILM/ CASSETTE	EXPOSURE: <u>OBL WALL</u>	S. WALL	VIEWING: <u>DBI WALL</u>	S. WALL	MR/R SCREENS <u>5</u>	PS		
TRUCK NO. <u>T-89</u>	REPORT NO. <u>1</u>	PAGE NO. <u>1</u>	TECH. HOURS <u>4</u>	ASST. HOURS <u>4</u>	TRAVEL HOURS <u>2</u>	TOTAL HOURS <u>6</u>	MILEAGE <u>100</u>						
FILM INTERPRETER <u>[Signature]</u>				ASST. NAME <u>Devin Jackson</u>				ASNT LEVEL <u>II</u>					
COMPANY REPRESENTATIVE <u>[Signature]</u>				NDT TECHNICIAN <u>Joe Ewy</u>				ASNT LEVEL <u>II</u>					

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TULSA, OKLAHOMA 74104-3900
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1 - 800 - 625-9288
www.tulsagammaray.com

CUSTOMER DATA

NAME Spectrum LNG
ADDRESS Stroud, OK
PHONE TC 440 ATTN: 10-9-15 DSI
W.O. # TC 440 P.O. # 10-9-15 DSI
JOB LOCATION Stroud, OK
DESCRIPTION Repairs MATERIAL TYPE: cks

TECHNIQUE/INSPECTION REPORT

DATE 10-9-15 DAY FRIDAY

DEFECT CODE				ABBREVIATED TERMS			
AB - ARC BURN	HB - HOLLOW BEAD	SLI - SLAG INCLUSION	SOD - SOURCE TO OBJECT DISTANCE	OD - OUTER DIAMETER	REP - REPAIR	RET - RETAKE	
AI - ALIGNED INDICATION	IF - INADEQUATE FUSION	SLL - SLAG LINE	OFD - SOURCE SIDE OF OBJECT TO FILM DISTANCE	WT - WELD THICKNESS	RES - RESHOOT		
BT - BURN THROUGH	IP - INCOMPLETE PENETRATION	SURF - SURFACE INDICATION		WR - WELD REINFORCEMENT	BM - BASE MATERIAL		
CON - CONCAVITY	MA - MISALIGNMENT	UCE - UNDERCUT EXTERNAL					
CRACK - CRACK	POR - POROSITY	UCI - UNDERCUT INTERNAL					

WELD/FILM NUMBER	JOB NUMBER	OD	BM	WR	WT	WITHIN STD'S		# FILM	FILM SIZE / MFG / TYPE	SOD	OFD	IQI S-F	# EXP	DEFECT LOCATION
						YES	NO							
1 W1	T-2	71B	2	218	128	275			3 1/2 x 8 1/2	236	275	1B	1	
2	23								D4					
3	3-T													
4 W1R	3-T													11
5 W5R	T2	73B												
6	23													
7	3-T													.063 POR
8 W1R	3-T	7FL												
9 W6R	2-3													
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METHOD	RT	SOURCE SIZE DIAG.	1B1	ISOTOPE	IR 192	NO. CURIES	65.0	DEV. TIME	5:00	DEV. TEMP	68°	DENSITY	2.0-4.0
NO. OF WELDS	5	FT. LONG SEAMS		STANDARDS	BSI-3	NO. OF FILM	9	FILM CASSETTE	EXPOSURE: DBL WALL	S WALL	MR/R	SCREENS	5
TRUCK NO.	T89	REPORT NO.	1	PAGE NO.	1	TECH. HOURS	4	ASST. HOURS	4	TRAVEL HOURS	2	TOTAL HOURS	6
SHOP		FILM INTERPRETER	J. Ewy	ASST. NAME	Dennis Jackson	ASNT LEVEL	II	NDT TECHNICIAN	JOE Ewy	ASNT LEVEL	II	MILEAGE	100

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Exhibit 2

ELECTRONIC CODE OF FEDERAL REGULATIONS**e-CFR data is current as of March 22, 2016**

Title 49 → Subtitle B → Chapter I → Subchapter D → Part 193 → Subpart A → §193.2001

Title 49: Transportation

PART 193—LIQUEFIED NATURAL GAS FACILITIES: FEDERAL SAFETY STANDARDS

Subpart A—General

§193.2001 Scope of part.

(a) This part prescribes safety standards for LNG facilities used in the transportation of gas by pipeline that is subject to the pipeline safety laws (49 U.S.C. 60101 *et seq.*) and Part 192 of this chapter.

(b) This part does not apply to:

(1) LNG facilities used by ultimate consumers of LNG or natural gas.

(2) LNG facilities used in the course of natural gas treatment or hydrocarbon extraction which do not store LNG.

(3) In the case of a marine cargo transfer system and associated facilities, any matter other than siting pertaining to the system or facilities between the marine vessel and the last manifold (or in the absence of a manifold, the last valve) located immediately before a storage tank.

(4) Any LNG facility located in navigable waters (as defined in Section 3(8) of the Federal Power Act (16 U.S.C. 796 (8))).

[45 FR 9203, Feb. 11, 1980, as amended by Amdt. 193-1, 45 FR 57418, Aug. 28, 1980; Amdt. 193-10, 61 FR 18517, Apr. 26, 1996]

Need assistance?

ELECTRONIC CODE OF FEDERAL REGULATIONS**e-CFR data is current as of March 22, 2016**

Title 49 → Subtitle B → Chapter I → Subchapter D → Part 191 → §191.23

Title 49: Transportation**PART 191—TRANSPORTATION OF NATURAL AND OTHER GAS BY PIPELINE; ANNUAL REPORTS, INCIDENT REPORTS, AND SAFETY-RELATED CONDITION REPORTS****§191.23 Reporting safety-related conditions.**

(a) Except as provided in paragraph (b) of this section, each operator shall report in accordance with §191.25 the existence of any of the following safety-related conditions involving facilities in service:

(1) In the case of a pipeline (other than an LNG facility) that operates at a hoop stress of 20 percent or more of its specified minimum yield strength, general corrosion that has reduced the wall thickness to less than that required for the maximum allowable operating pressure, and localized corrosion pitting to a degree where leakage might result.

(2) Unintended movement or abnormal loading by environmental causes, such as an earthquake, landslide, or flood, that impairs the serviceability of a pipeline or the structural integrity or reliability of an LNG facility that contains, controls, or processes gas or LNG.

(3) Any crack or other material defect that impairs the structural integrity or reliability of an LNG facility that contains, controls, or processes gas or LNG.

(4) Any material defect or physical damage that impairs the serviceability of a pipeline that operates at a hoop stress of 20 percent or more of its specified minimum yield strength.

(5) Any malfunction or operating error that causes the pressure of a pipeline or LNG facility that contains or processes gas or LNG to rise above its maximum allowable operating pressure (or working pressure for LNG facilities) plus the build-up allowed for operation of pressure limiting or control devices.

(6) A leak in a pipeline or LNG facility that contains or processes gas or LNG that constitutes an emergency.

(7) Inner tank leakage, ineffective insulation, or frost heave that impairs the structural integrity of an LNG storage tank.

(8) Any safety-related condition that could lead to an imminent hazard and causes (either directly or indirectly by remedial action of the operator), for purposes other than abandonment, a 20 percent or more reduction in operating pressure or shutdown of operation of a pipeline or an LNG facility that contains or processes gas or LNG.

(b) A report is not required for any safety-related condition that—

(1) Exists on a master meter system or a customer-owned service line;

(2) Is an incident or results in an incident before the deadline for filing the safety-related condition report;

(3) Exists on a pipeline (other than an LNG facility) that is more than 220 yards (200 meters) from any building intended for human occupancy or outdoor place of assembly, except that reports are required for conditions within the right-of-way of an active railroad, paved road, street, or highway; or

(4) Is corrected by repair or replacement in accordance with applicable safety standards before the deadline for filing the safety-related condition report, except that reports are required for conditions under paragraph (a)(1) of this section other than localized corrosion pitting on an effectively coated and cathodically protected pipeline.

[Amdt. 191-6, 53 FR 24949, July 1, 1988, as amended by Amdt. 191-14, 63 FR 37501, July 13, 1998]

Need assistance?

ELECTRONIC CODE OF FEDERAL REGULATIONS

e-CFR data is current as of March 22, 2016

Title 49 → Subtitle B → Chapter I → Subchapter D → Part 193 → Subpart A → §193.2011

Title 49: Transportation

PART 193—LIQUEFIED NATURAL GAS FACILITIES: FEDERAL SAFETY STANDARDS

Subpart A—General

§193.2011 Reporting.

Incidents, safety-related conditions, and annual pipeline summary data for LNG plants or facilities must be reported in accordance with the requirements of Part 191 of this subchapter.

[75 FR 72906, Nov. 26, 2010]

Need assistance?

ELECTRONIC CODE OF FEDERAL REGULATIONS**e-CFR data is current as of March 24, 2016**

Title 49 → Subtitle B → Chapter I → Subchapter D → Part 192 → Subpart E → §192.241

Title 49: Transportation**PART 192—TRANSPORTATION OF NATURAL AND OTHER GAS BY PIPELINE: MINIMUM FEDERAL SAFETY STANDARDS****Subpart E—Welding of Steel in Pipelines**

§192.241 Inspection and test of welds.

(a) Visual inspection of welding must be conducted by an individual qualified by appropriate training and experience to ensure that:

- (1) The welding is performed in accordance with the welding procedure; and
- (2) The weld is acceptable under paragraph (c) of this section.

(b) The welds on a pipeline to be operated at a pressure that produces a hoop stress of 20 percent or more of SMYS must be nondestructively tested in accordance with §192.243, except that welds that are visually inspected and approved by a qualified welding inspector need not be nondestructively tested if:

- (1) The pipe has a nominal diameter of less than 6 inches (152 millimeters); or
- (2) The pipeline is to be operated at a pressure that produces a hoop stress of less than 40 percent of SMYS and the welds are so limited in number that nondestructive testing is impractical.

(c) The acceptability of a weld that is nondestructively tested or visually inspected is determined according to the standards in section 9 or Appendix A of API Std 1104 (incorporated by reference, see §192.7). Appendix A of API Std 1104 may not be used to accept cracks.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-37, 46 FR 10160, Feb. 2, 1981; Amdt. 192-78, 61 FR 28784, June 6, 1996; Amdt. 192-85, 63 FR 37503, July 13, 1998; Amdt. 192-94, 69 FR 32894, June 14, 2004; Amdt. 192-119, 80 FR 181, Jan. 5, 2015; Amdt. 192-120, 80 FR 12778, Mar. 11, 2015]

Need assistance?

ELECTRONIC CODE OF FEDERAL REGULATIONS**e-CFR data is current as of March 22, 2016**

Title 49 → Subtitle B → Chapter I → Subchapter D → Part 192 → Subpart E → §192.243

Title 49: Transportation

PART 192—TRANSPORTATION OF NATURAL AND OTHER GAS BY PIPELINE: MINIMUM FEDERAL SAFETY STANDARDS

Subpart E—Welding of Steel in Pipelines

§192.243 Nondestructive testing.

(a) Nondestructive testing of welds must be performed by any process, other than trepanning, that will clearly indicate defects that may affect the integrity of the weld.

(b) Nondestructive testing of welds must be performed:

(1) In accordance with written procedures; and

(2) By persons who have been trained and qualified in the established procedures and with the equipment employed in testing.

(c) Procedures must be established for the proper interpretation of each nondestructive test of a weld to ensure the acceptability of the weld under §192.241(c).

(d) When nondestructive testing is required under §192.241(b), the following percentages of each day's field butt welds, selected at random by the operator, must be nondestructively tested over their entire circumference:

(1) In Class 1 locations, except offshore, at least 10 percent.

(2) In Class 2 locations, at least 15 percent.

(3) In Class 3 and Class 4 locations, at crossings of major or navigable rivers, offshore, and within railroad or public highway rights-of-way, including tunnels, bridges, and overhead road crossings, 100 percent unless impracticable, in which case at least 90 percent. Nondestructive testing must be impracticable for each girth weld not tested.

(4) At pipeline tie-ins, including tie-ins of replacement sections, 100 percent.

(e) Except for a welder or welding operator whose work is isolated from the principal welding activity, a sample of each welder or welding operator's work for each day must be nondestructively tested, when nondestructive testing is required under §192.241(b).

(f) When nondestructive testing is required under §192.241(b), each operator must retain, for the life of the pipeline, a record showing by milepost, engineering station, or by geographic feature, the number of girth welds made, the number nondestructively tested, the number rejected, and the disposition of the rejects.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-27, 41 FR 34606, Aug. 16, 1976; Amdt. 192-50, 50 FR 37192, Sept. 12, 1985; Amdt. 192-78, 61 FR 28784, June 6, 1996; Amdt. 192-120, 80 FR 12779, Mar. 11, 2015]

Need assistance?